

EMERSON MODEL 520

TRADE NAME Emerson, Model 501, 502, 504 & 520 (Chassis 120000, 120029)  
MANUFACTURER Emerson Radio & Phono. Corp., 111 Eighth Ave., New York 11, N.Y.  
TYPE SET AC - DC Superheterodyne - Self Contained Loop Antenna  
TUBES (FIVE) Types 12SA7 Converter, 12SK7 IF Amp., 12SQ7 Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier

POWER SUPPLY 105-125 Volts AC-DC Rating .245 Amp. @ 117 Volts AC

TUNING RANGE—BROADCAST 540-1620KC SHORT WAVE

ALIGNMENT INSTRUCTIONS						
DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.05 MFD	High side to ant. stator section of tuning gang. Low side to B-.	455KC	High freq. end of dial. (min. cap.)	Across voice coil	A1, A2, A3, A4.	Adjust for maximum output. Use isolation transformer if available. If not, isolating capacitor must be connected between generator ground lead and receiver B-. Also decrease dummy ant. to .001 MFD to prevent excessive hum modulation.
	Loop	1425KC	1425KC	"	A5, A6	Adjust for maximum output. Connect signal generator to loop of few turns of wire and radiate signal into receiver loop (no direct connection).
	"	600KC	600KC	"	Turn on loop.	Adjust loose outside turn on loop for maximum output. (move to either side of center) Repeat adjustments on A5 and A6 as given for maximum.

Volume control at maximum volume and output from signal generator no higher than necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

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MODELS 501, 502, 504, 520  
(CHASSIS 120,000, 120,029)

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## PARTS LIST AND DESCRIPTIONS

### TUBES

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		EMERSON PART No.	STANDARD REPLACEMENT		
1	Converter	12SA7	12SA7	8R	
2	IF Amp.	12SK7	12SK7	8N	
3	Det.-AVC-AF	12SQ7	12SQ7	8Q	
4	Power Output	50L6GT	50L6GT	7AC	
5	Rectifier	35Z5GT	35Z5GT	6AD	

### CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLTS	EMERSON PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	
6 (A)	50	150	925000	2N520	DHN-2x50-150	TA-530	PRS150-40-40	BRD3515	Filter - Green
7 (B)	30	150							Filter - Red
8	.05	400	920030	TP426	S-4-05	TC-15	484-.05	BT4S5	Line Filter
9	.2	200	920050	TP429	S-4-2	TC-2	484-.2	DT4F2	Line Isolating
10	.02	400	920020	TP423	S-4-02	TC-12	484-.02	DT4S2	50L6 Plate Bypass
11	.02	400	920020	TP423	S-4-02	TC-12	484-.02	DT4S2	Audio Coupling
12	.001	600	920170	TP404	S-6-001	TC-21	684-.001	DT6D1	Audio Plate Bypass
13	.002	600	920010	TP405	S-6-002	TC-22	684-.002	DT6D2	Audio Coupling
14	.1	200	920040	TP428	S-4-1	TC-1	484-.1	DT4P1	AVC Filter
15	.002	600	920010	TP405	S-6-002	TC-22	684-.002	DT6D2	Ant. Coupling
16	220	500	910000	MC240	MO.5-325	1FM-325	1468-.00025	5W5T25	RF Bypass Vol. Cont.

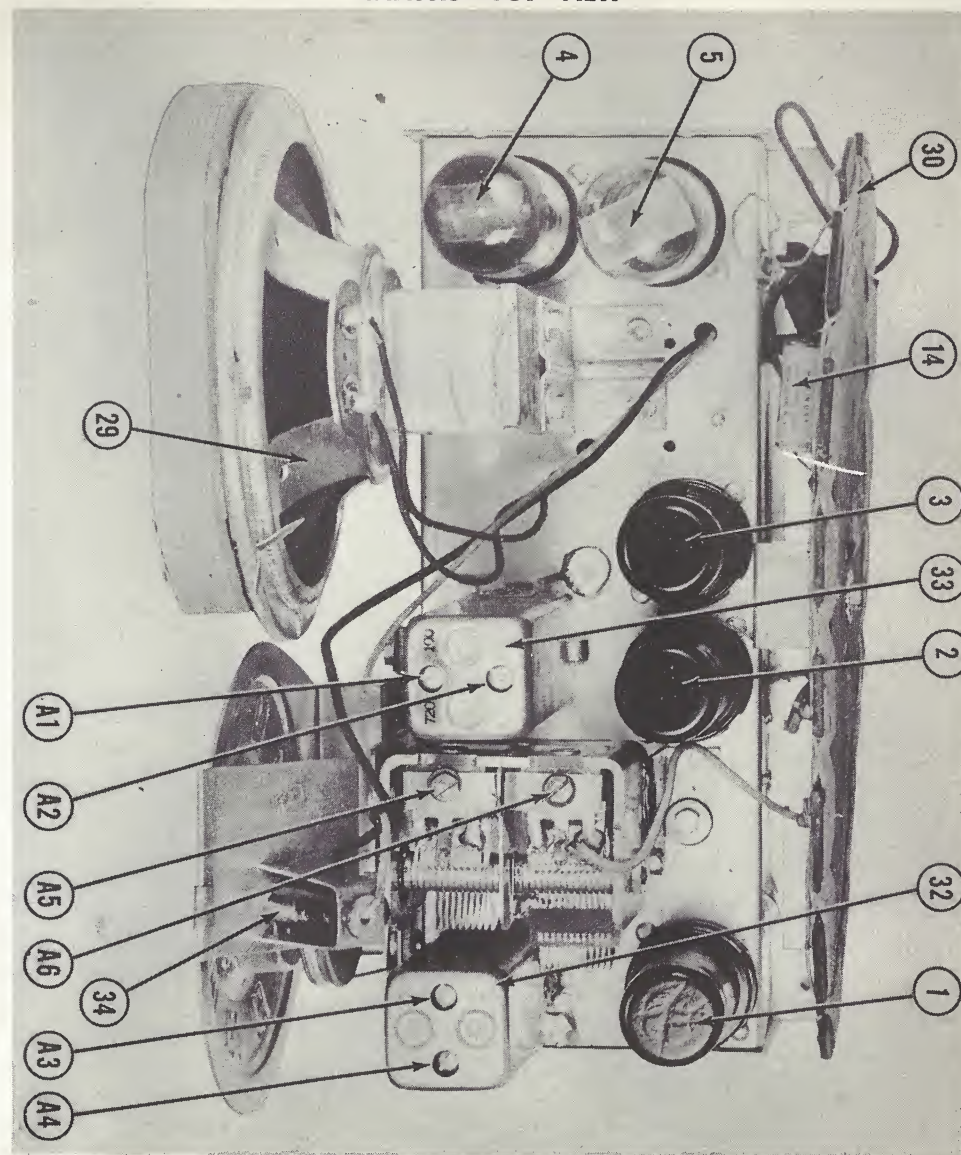
### CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	EMERSON PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
16 (A)	500K $\pm$	1	390010	MK401	D11-133	AM-58-S	Volume Control
17 (B)	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 16A per instr.
18 (C)	Switch			M25	41	SW-A	

### RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	EMERSON PART No.	IRC PART No.	
17	15 Meg.	$\frac{1}{2}$	397000	BTS-15 Meg.	Br.-Grn.-Blue AVC Network
18	22K $\pm$	$\frac{1}{2}$	310810	BTS-22K	Red-Red-Or. Osc. Grid
19	3.3 Meg.	$\frac{1}{2}$	321330	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
20	15 Meg.	$\frac{1}{2}$	397000	BTS-15 Meg.	Br.-Grn.-Blue 1st AF Grid
21	470K $\pm$	$\frac{1}{2}$	321130	BTS-470K	Yl.-Vl.-Yl. 1st AF Plate Load
22	470K $\pm$	$\frac{1}{2}$	321130	BTS-470K	Yl.-Vl.-Yl. Output Grid
23	150 $\Omega$	$\frac{1}{2}$	340290	BW- $\frac{1}{2}$ -150	Br.-Grn.-Br. Output Cathode
24	1000 $\Omega$	$\frac{1}{2}$	370490	BW-1-1000	Br.-Blk.-Red Filter
25	6.8 $\Omega$	$\frac{1}{2}$		BW- $\frac{1}{2}$ -6.8	Blue-Gray-Gold Pilot Light Ballast
26	15 $\Omega$	$\frac{1}{2}$	397040	BW-1-15	Br.-Grn.-Blk. Rectifier Ballast
27	220K $\pm$	$\frac{1}{2}$	321050	BTS-220K	Red-Red-Yl. Line Isolating

## CHASSIS—TOP VIEW





## PARTS LIST AND DESCRIPTIONS

### TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		EMERSON PART No.	STANCOR PART No.	THORDAR'N PART No.	UTAH PART No.	
	PRI.	SEC.	PRI.	SEC.					
28.	2010 $\Omega$	3.2 $\Omega$	215 $\Omega$	.85 $\Omega$	734000	A3876*	T-14S82*	8775*	*Requires one new mounting hole.

### SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			EMERSON PART No.	JENSEN PART No.	UTAH PART No.	
29	FIELD PM	VC IMP. 3.2 $\Omega$	180000	ST-107#	5PZ#	#New mounting bracket must be fabricated.
	CONE DIA: 4-5/8"	VC DIA. 1/2"	NOT REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

### R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	EMERSON PART No.	MEISSNER PART No.	
30	Loop Ant.	0 $\Omega$	1 $\Omega$	700000		May be replaced with 700200
31	Osc. Coil	.5 $\Omega$	5.5 $\Omega$	718010	†14-1040	†Connect 50MMFD from osc. grid to coil(lug 1)
32	Input IF	28 $\Omega$	18 $\Omega$	720000	*16-6666	*Drill new mounting holes
33	Output IF	23 $\Omega$	22 $\Omega$	720100	*16-6667	" " " "

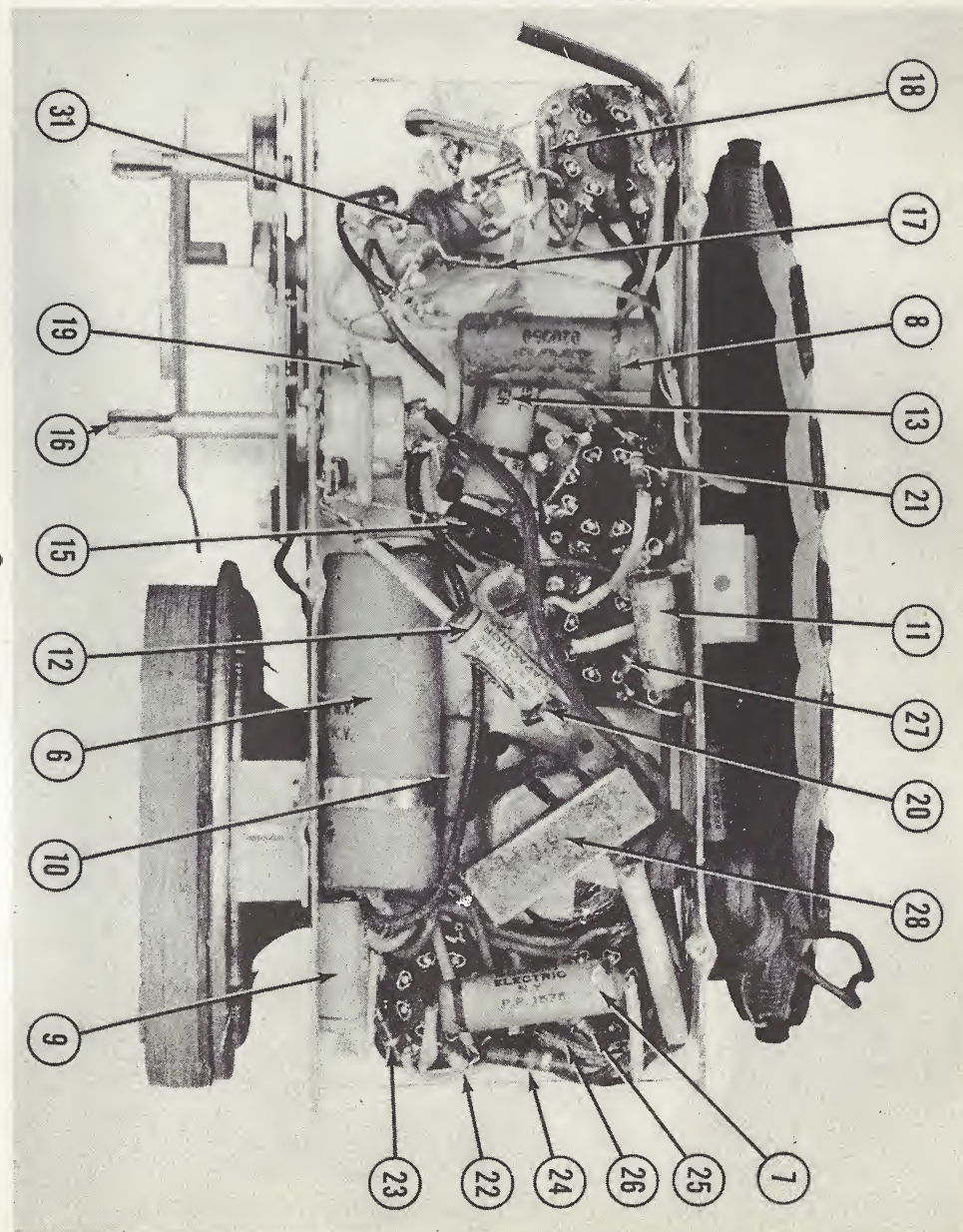
### DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					EMERSON PART No.		
34	Bayonet	6-8	.150	Brown	807000		Type 47

### MISCELLANEOUS

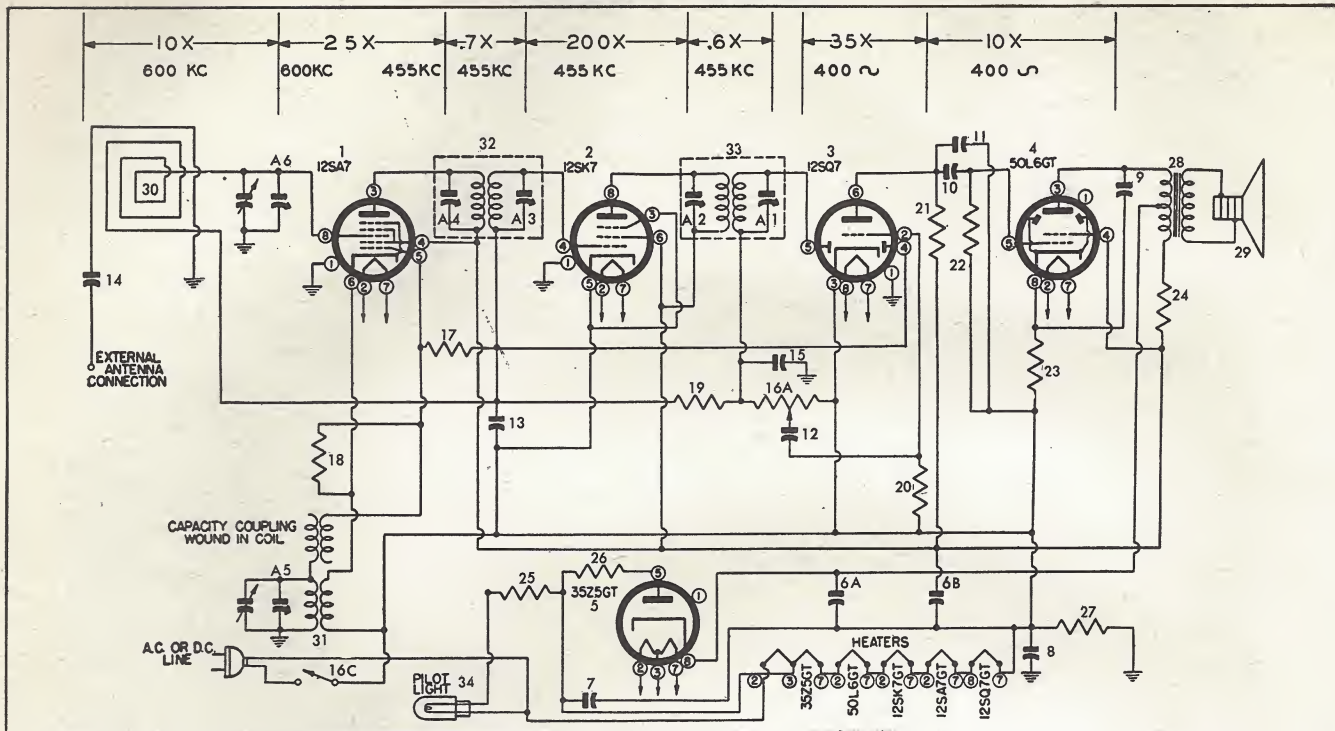
ITEM No.	PART NAME	EMERSON PART No.	NOTES
A5	Trimmer		Part of Main Tuning Capacitor
A6	Tuning Cap.	900170	Two Gang Main Tuning Capacitor(Ch.120000)
	"	900290	" " " " (Ch.120029)
	"	900160	" " " " "
	Dial Pointer	525010	Assembly
	Knob	460140	

## CHASSIS—BOTTOM VIEW



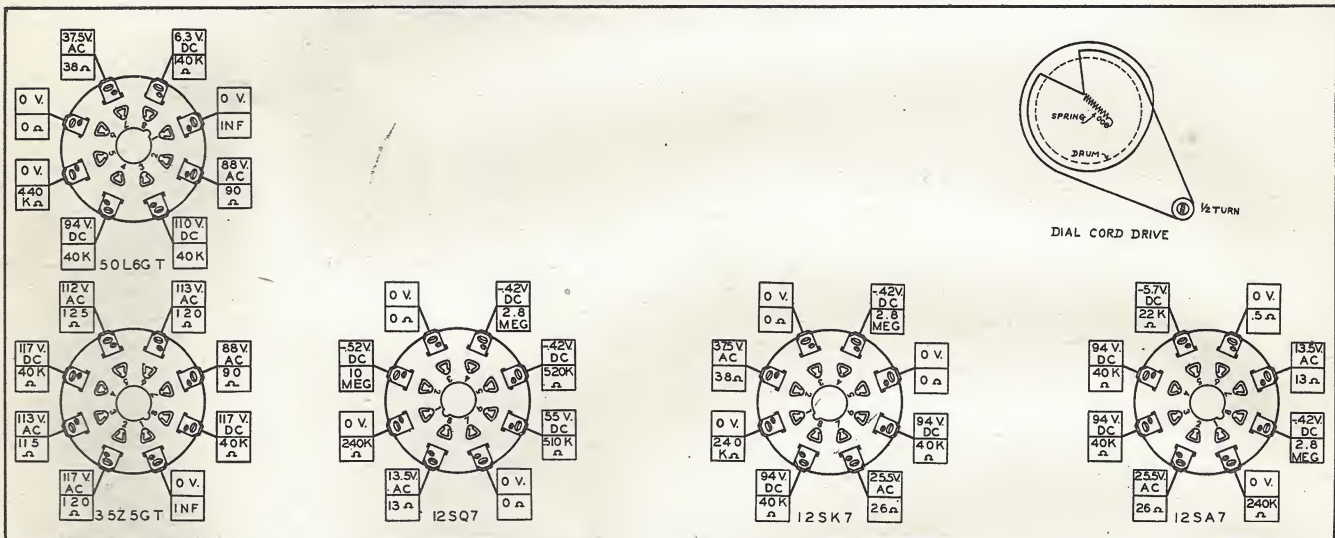


## SCHEMATIC DIAGRAM



The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

## VOLTAGE AND RESISTANCE ANALYSIS CHART



- 1 - DC Voltage measurements are at 20,000 ohms per volt: AC Voltages measured at 1000 ohms per volt.
- 2 - Socket connections are shown as bottom views.
- 3 - Measured values are from socket pin to common negative.
- 4 - Line voltage maintained at 117 volts for voltage readings.
- 5 - Nominal tolerance on component values makes possible a variation of  $\pm 10\%$  in voltage and resistance readings.
- 6 - Volume control at maximum, no signal applied for voltage measurements.

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